Chapter 10 - Noise Barriers

NOISE BARRIERS
(NB)
Chapter 10 - Noise Barriers

SECTION 01
GROUND MOUNTED NOISE BARRIERS (NB-GM)
GENERAL NOTES - GROUND MOUNTED CONCRETE NOISE BARRIER

CONCRETE
CONCRETE COMpressive STRENGTH FOR DESIGN SMALL RE:
F'c = 5000 psi FOR ELEMENTS USING MIX NO. 3
F'c = 5000 psi FOR ELEMENTS USING MIX NO. 4
F'c = 6000 psi FOR PRECAST ELEMENTS USING MIX NO. 6
All concrete for drilled shafts shall be mix NO. 4 (5500 psi).
All concrete for grade beams shall be mix NO. 3 (5000 psi).
All concrete for precast concrete elements shall be mix NO. 6 (5500 psi).
When exposed aggregate is specified the coarse aggregate shall be AASHTO size NO. 57 washed aggregate.

PRESTRESSED CONCRETE
CONCRETE COMpressive STRENGTH FOR DESIGN SMALL RE:
F'c = 3500 psi (0.75 fpu).
F'c = 4000 psi (0.90 fpu). Have an ultimate yield strength of 37,200 lb (0.90 fpu).
F'c = 3000 psi for elements using mix NO. 4.
F'c = 2000 psi for elements using mix NO. 3.
All concrete for drilled shafts shall be mix NO. 4 (5500 psi).

REINFORCING STEEL
REINFORCING STEEL SHALL CONFORM TO ASTM A 615 GRADE 60, WITH A YIELD STRENGTH OF 41,300 lb (fpu) AND A YIELD STRENGTH OF 37,200 lb (0.90 fpu).

ANCHOR RODS, NUTS, AND WASHERS SHALL BE CARBON STEEL, ETC., ORDERED OR FABRICATED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY STRUCTURAL STEEL FOR ANCHOR PLATES, ALL HARDENED COLOR, OR NEED FOR EPOXY TREATMENT, ANTI-GRAFFITI COATING, OR NEED FOR EPOXY COATING, SEE THE SPECIAL PROVISIONS.

OPTIONS:

CONTRACT NO.

ALTERNATIVES:

THERE ARE NO ALTERNATIVES PERMITTED IN THIS CONTRACT.

THE OPTIONS INDICATED BELOW WITH AN "X" ARE PERMITTED IN THIS CONTRACT.

POST TYPE:
POST SPACING:
PRETENSIONING STEEL:
PRETENSIONING STEEL SHALL CONSIST OF 5/8 DIAMETER 7-WIRE BRIGHT LOW RELAXATION STRANDS CONFORMING TO THE REQUIREMENTS OF M 203 GRADE 270. EACH STRAND SHALL BE PRETENSIONED TO 31,000 LBS. HAVE AN ULTIMATE YIELD STRENGTH OF 41,300 LBS AND A YIELD STRENGTH OF 37,200 LBS.

TECHNICAL SPECIFICATIONS:
TECHNICAL SPECIFICATIONS ARE DRAFT.

CONTRACT NO.

NB-GM-101

APPROVAL:

DATE:

DIRECTOR

CHECKED BY

DRAWN BY

DESIGNED BY

SCALE

FILE:

GENERAL NOTES

THERE ARE NO GENERAL NOTES PERMITTED IN THIS CONTRACT.

THE OPTIONS INDICATED BELOW WITH AN "X" ARE PERMITTED IN THIS CONTRACT.

CONTRACT NO.

NB-GM-101

APPROVAL:

DATE:

DIRECTOR

CHECKED BY

DRAWN BY

DESIGNED BY

SCALE

FILE:

GENERAL NOTES

THERE ARE NO GENERAL NOTES PERMITTED IN THIS CONTRACT.

THE OPTIONS INDICATED BELOW WITH AN "X" ARE PERMITTED IN THIS CONTRACT.
**NOTES:**

1. **CONNECTION TEMPLATE DETAILS**
   - Holes to match drilled shaft form.
   - Spacing (S) varies.

2. The template shall only be used to properly position bolts. After concrete has set template shall be removed.

3. No shop or field bending of the anchor bolts will be allowed.

4. The compacted concrete shall be the responsibility of the contractor, and the anchor rods shall be cast plumb and in their proper alignment. If a different method or configuration is desired by the contractor, the contractor shall submit working drawings showing the proposed method and obtain written approval prior to its use.

5. After concreting has set template shall be removed.

6. The template shall be modified as directed by the engineer at no additional cost.

7. The template shall only be used to properly position bolts. After concrete has set template shall be removed.

8. The template shall be used to properly position bolts. After concrete has set template shall be removed.

9. The template shall be used to properly position bolts. After concrete has set template shall be removed.

10. The template shall be used to properly position bolts. After concrete has set template shall be removed.
HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.

ACCESS DOOR AND HYDRANT LOCATION

SCALE 1/8\" = 1'-0\"

HYDRANT LOCATION IN WALL PANEL

SCALE 1/8\" = 1'-0\"

ACCESS DOOR DETAIL

SCALE 1/8\" = 1'-0\"

NOTE:
1. Doors of openings shall be located as shown on the barrier location plans. The lower edge of the door shall be located 2'-0" above the finished grade on both the highway side and the rear side at a given location.
2. Door and frame shall be prefabricated construction suitable for exterior door applications. All doors shall be painted on the face of image. Door color shall match the post color and the finish shall be resistant to fading from exposure to ultraviolet light. Doors may be pre-hung and shall have a preservative finish on interior face.
3. Door panel when needed, the top edge shall be matched to doors from adjacent panel. As shown or as required by the engineer, door panels shall be stainless steel panels from 0.060" to 0.125" thick and 2'-0" long.
4. Doors shall have stainless steel locking devices with aluminum or stainless steel panel. All locks shall be keyed to match the door locks in noise barriers for the county in which the project is located.
5. Doors shall be mounted flush with the highway side of the noise barrier.
IN ANNE ARUNDEL OR BALTIMORE COUNTIES.

THIS SHEET NOT APPLICABLE FOR CONTRACTS

**HYDRANT CONNECTION DETAILS**

**SCALE:** 1/2"=1'-0"

---

**ASSEMBLY OF FIRE ANCHORS**

**PIPE CONNECTION DETAILS**

**ELEVATION**

**ADDITIONAL REINFORCING REQUIRED**

**NOTES:**

1. All exterior assemblies shall be of AARON BRASS CO., AKRON, OH (CAST IRON).
2. All other assemblies shall be of STEEL and CAST IRON.
3. All pipe connections shall be of STEEL and CAST IRON.
4. All bolts shall be of HOT-DIP GALVANIZED STEEL.

**STANDARD FIRE DEPARTMENT CONNECTION**

**SCALE:** 1/2"=1'-0"
Chapter 10 - Noise Barriers

SECTION 02

WALL MOUNTED NOISE BARRIERS (NB-WM)
GENERAL NOTES - RETAINING WALL MOUNTED CONCRETE NOISE BARRIER

SPECIFICATIONS: MDOT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JULY 20XX.

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 9TH EDITION.

LOADING: THE DESIGN WIND LOAD FOR THIS CUMULATIVE MOUNTED NOISE BARRIER SYSTEM IS 6.4% FOR APPLIED PERPENDICULAR TO THE BARRIER IN EACH DIRECTION.

THE NOISE BARRIER SYSTEM HAS BEEN DESIGNED FOR A 20'-0" MAXIMUM RETAINING WALL HEIGHT.

THE NOISE BARRIER SYSTEM HAS BEEN DESIGNED FOR THE ADDITIONAL DEAD LOAD MOMENT CAUSED BY A TWO DEGREE (2°) ROTATION OF THE PANELS AND POSTS AT THE TOP OF THE RETAINING WALL.

CONCRETE: CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:

f'c = 3000 psi FOR ELEMENTS USING MIX NO. 3
f'c = 4000 psi FOR ELEMENTS USING MIX NO. 4
f'c = 6000 psi FOR PRECAST ELEMENTS USING MIX NO. 6

ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 6000 PSI WHEN EXPOSED AGGREGATE IS SPECIFIED THE CONCRETE AGGREGATE SHALL BE AASHTO SIZE NO. 57 WASHED QUARTZ GRAVEL.

REINFORCING STEEL: REINFORCING STEEL SHALL CONFORM TO ASTM A 615, WITH A YIELD STRENGTH FOR DESIGN OF fy = 60 000 psi.

WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497 WITH A YIELD STRENGTH FOR DESIGN OF fy = 70 000 psi.

ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.

REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE WITHIN 6 FT OF THE OUTSIDE EDGE OF THE PRECAST CONCRETE PANEL SHALL BE EPOXY COATED.

ADDITIONAL REINFORCING, WHICH MAY BE REQUIRED FOR HANDLING IN THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

CONTRACT APPROVED POST SPACING:

- 12'
- 16'
- 20'

NOTES: STANDARD SHEET NO. X AND X OF 9 NOT USED.
PRECAST CONCRETE NOISE BARRIER ON RETAINING WALL

SCALE: 1" = 1'-0"

1. POSTS SHALL EXTEND TO THE TOP OF THE HIGHER PANEL.

2. POSTS SHALL EXTEND TO THE TOP OF PANELS IF TOP OF PANELS IS DIFFERENT ELEVATIONS.

3. MAXIMUM POST HEIGHT IS 24'-0".

4. STEPPED PANELS ARE OPTIONAL FOR 12'-0" MAXIMUM POST HEIGHT.

NOTES:

1. SEE GENERAL NOTES SHEET NO. WMNB 1 OF 9.

2. STEEL POSTS SHALL ALIGN (TYP.) WITH HORIZONTAL JOINTS (TYP.) AT POST WALL (TYP.) THICKNESS.

3. PANEL BOTTOM EDGE SHALL ALIGN (TYP.) WITH TOP OF ELASTOMERIC (MAX.) BARRIER.

4. STEEL POSTS (PLUMB) SHALL EXTEND TO THE TOP OF ELASTOMERIC (MAX.) BARRIER.

5. MAXIMUM POST HEIGHT IS 24'-0".

6. STEPPED PANELS ARE OPTIONAL FOR 12'-0" POST SPACING.

7. SEE DRAWING THIS SHEET FOR CURB DETAILS.

8. SEE DRAWING THIS SHEET FOR STEP LIMITS:

   a. 2'-0" MAX.
   b. 1'-6" MAX.
   c. 1'-0" MAX.

9. LIMITS OF PANEL SURFACE FINISH (HIGHWAY SIDE).

10. COVER REQUIRED 6" MINIMUM GROUND FINISH (HIGHWAY SIDE).

11. TOP OF RETAINING WALL (TYP.) VARIES.

12. TOP OF NOISE BARRIER (TYP.) VARIES.

13. PANEL (TYP.) PRECAST CONCRETE STACKED PANELS TYP.

14. PANEL (TYP.) PRECAST CONCRETE NOISE BARRIER ON RETAINING WALL (TYP.) POST SPACE (TYP.) STEEL POST (PLUMB) BEARING PAD ELASTOMERIC SHAPE: POST (TYP.) W10x60 STEEL POST (TYP.) W10x100 W10x77
LEVELING NUT AND HARDENED WASHERS SHEET) WITH SELF-LOCKING OVERSIZED NUT, ANCHOR ROD (FOR SIZE, SEE CHART THIS SHEET) 1554 GRADE 55 S-1 HOT DIP GALVANIZED CASTING OF CONCRETE TIGHTENED PRIOR TO NUTS TO BE FULLY ALLOW PLACEMENT OF BASE PLATE. ALL NUTS SHALL BE FULLY TIGHTENED PRIOR TO CASTING TEMPLATE ON TOP OF THE RETAINING WALL OVERSIZED NUTS SHALL BE USED AS A TEMPORARY BARRIER, FOR SIZE SEE CHART THIS SHEET FOR HOLES (TYP.) NOT TO DROP CONCRETE ON ANCHOR PLATE. WHEN PLACING CONCRETE, CONTRACTOR SHALL USE CARE NOT TO DROP CONCRETE ON ANCHOR PLATE. ANCHOR ROD SPACING FOR 90° CORNER POSTS IS DIFFERENT THAN TYPICAL POST. CORNERS OTHER THAN 90° SHALL BE DETAILED BY THE CONTRACTOR IN THE SHOP DRAWINGS.

NOTES:
1. POST CAPS 1/2" FLAT FOR 90° CORNER POSTS SHOWN TO END POST DETAIL.
2. 90° CORNER POSTS SIMILAR TO END POST DETAIL.
3. PROVIDE POST CAPS (''' PL) FOR 90° CORNER POSTS DISTANT THAN TYPICAL POST.

DETAIL NO. NB-WM-101

SCALE: $\frac{1}{8}'' = 1'-0''$

ANCHOR PLATE DETAIL

SECTION M-M

POST/RETAINING WALL DETAIL

ELEVATION

POST DETAIL

BASE PLATE DETAIL

SECTION M-M

ANCHOR PLATE DETAIL

LEVELING NUT AND BOLTS SHEET) WITH SELF-LOCKING NUT, ANCHOR ROD (FOR SIZE, SEE CHART THIS SHEET) 1554 GRADE 55 S-1 HOT DIP GALVANIZED CASTING OF CONCRETE TIGHTENED PRIOR TO NUTS TO BE FULLY ALLOW PLACEMENT OF BASE PLATE. ALL NUTS SHALL BE FULLY TIGHTENED PRIOR TO CASTING TEMPLATE ON TOP OF THE RETAINING WALL OVERSIZED NUTS SHALL BE USED AS A TEMPORARY BARRIER, FOR SIZE SEE CHART THIS SHEET FOR HOLES (TYP.) NOT TO DROP CONCRETE ON ANCHOR PLATE. WHEN PLACING CONCRETE, CONTRACTOR SHALL USE CARE NOT TO DROP CONCRETE ON ANCHOR PLATE. ANCHOR ROD SPACING FOR 90° CORNER POSTS IS DIFFERENT THAN TYPICAL POST.

NOTES:
1. POST CAPS 1/2" FLAT FOR 90° CORNER POSTS SHOWN TO END POST DETAIL.
2. 90° CORNER POSTS SIMILAR TO END POST DETAIL.
3. PROVIDE POST CAPS (''' PL) FOR 90° CORNER POSTS DISTANT THAN TYPICAL POST.

DETAIL NO. NB-WM-101

SCALE: $\frac{1}{8}'' = 1'-0''$

ANCHOR PLATE DETAIL

SECTION M-M

POST DETAIL

BASE PLATE DETAIL

SECTION M-M

ANCHOR PLATE DETAIL

LEVELING NUT AND BOLTS SHEET) WITH SELF-LOCKING NUT, ANCHOR ROD (FOR SIZE, SEE CHART THIS SHEET) 1554 GRADE 55 S-1 HOT DIP GALVANIZED CASTING OF CONCRETE TIGHTENED PRIOR TO NUTS TO BE FULLY ALLOW PLACEMENT OF BASE PLATE. ALL NUTS SHALL BE FULLY TIGHTENED PRIOR TO CASTING TEMPLATE ON TOP OF THE RETAINING WALL OVERSIZED NUTS SHALL BE USED AS A TEMPORARY BARRIER, FOR SIZE SEE CHART THIS SHEET FOR HOLES (TYP.) NOT TO DROP CONCRETE ON ANCHOR PLATE. WHEN PLACING CONCRETE, CONTRACTOR SHALL USE CARE NOT TO DROP CONCRETE ON ANCHOR PLATE. ANCHOR ROD SPACING FOR 90° CORNER POSTS IS DIFFERENT THAN TYPICAL POST.

NOTES:
1. POST CAPS 1/2" FLAT FOR 90° CORNER POSTS SHOWN TO END POST DETAIL.
2. 90° CORNER POSTS SIMILAR TO END POST DETAIL.
3. PROVIDE POST CAPS (''' PL) FOR 90° CORNER POSTS DISTANT THAN TYPICAL POST.

DETAIL NO. NB-WM-101

SCALE: $\frac{1}{8}'' = 1'-0''$

ANCHOR PLATE DETAIL

SECTION M-M

POST DETAIL

BASE PLATE DETAIL

SECTION M-M

ANCHOR PLATE DETAIL

LEVELING NUT AND BOLTS SHEET) WITH SELF-LOCKING NUT, ANCHOR ROD (FOR SIZE, SEE CHART THIS SHEET) 1554 GRADE 55 S-1 HOT DIP GALVANIZED CASTING OF CONCRETE TIGHTENED PRIOR TO NUTS TO BE FULLY ALLOW PLACEMENT OF BASE PLATE. ALL NUTS SHALL BE FULLY TIGHTENED PRIOR TO CASTING TEMPLATE ON TOP OF THE RETAINING WALL OVERSIZED NUTS SHALL BE USED AS A TEMPORARY BARRIER, FOR SIZE SEE CHART THIS SHEET FOR HOLES (TYP.) NOT TO DROP CONCRETE ON ANCHOR PLATE. WHEN PLACING CONCRETE, CONTRACTOR SHALL USE CARE NOT TO DROP CONCRETE ON ANCHOR PLATE. ANCHOR ROD SPACING FOR 90° CORNER POSTS IS DIFFERENT THAN TYPICAL POST.

NOTES:
1. POST CAPS 1/2" FLAT FOR 90° CORNER POSTS SHOWN TO END POST DETAIL.
2. 90° CORNER POSTS SIMILAR TO END POST DETAIL.
3. PROVIDE POST CAPS (''' PL) FOR 90° CORNER POSTS DISTANT THAN TYPICAL POST.
**IN ANNE ARUNDEL OR BALTIMORE COUNTIES.**

**THIS SHEET NOT APPLICABLE FOR CONTRACTS.**

---

**HYDRANT CONNECTION DETAILS**

**SCALE:** AS SHOWN

**ASSEMBLY OF FIRE ANCHOR AND PIPE CONNECTION DEVICE**

**ELEVATION:** ADDITIONAL REINFORCING REQUIRED AT EACH HYDRANT LOCATION.

**SHELL:** 12'' th. (CAST BRASS)

**PIECE:** 1'-3'' th. (CAST BRASS)

**PIPE OPENING:** 2" th. (HOLE IN PLATE)

**STEEL BOLTS:** GALVANIZED FOR †'' th. OPENING IN PLATE

**STEM:** 4'' th. (CAST IRON)

**PLATE:** 16'' th. x 6'' h. x 1'-4'' l. long, after drilling and welding, plate for bolts and pipe connection shown at each end of plate.

**NOTES:**

1. All materials, unless otherwise specified, shall be hot-dip galvanized steel, galvanized steel, and brass, unless otherwise specified.

2. All bolts and nuts shall be hot-dip galvanized steel bolts and nuts, and additional reinforcing shall be provided at each bolt hole.

3. All pipe connections shall be compatible with the pipe material.

---

**STANDARD FIRE DEPARTMENT CONNECTION**

**SCALE:** AS SHOWN

**WALL HYDRANT ASSEMBLY**

**SEE NOTE A**

**SIAMESE FITTING, DOUBLE CLAPPER “Y”**

**WALL HYDRANT ASSEMBLY**

**SEE NOTE B**

**NOTES:**

1. All pipe connections shall be compatible with the pipe material.

2. All bolts and nuts shall be hot-dip galvanized steel bolts and nuts, and additional reinforcing shall be provided at each bolt hole.

3. All metal parts shall be hot-dip galvanized steel, with 2 flat washers, lock washers, and all necessary hardware, as required.

---

**DRAWN BY:**

**CHECKED BY:**

**APPROVED BY:**

**DATE:**

---

**DRAFT**
WELD PLATE TO STEEL CONCENTRIC WITH LONGITUDINAL AXIS BEFORE BORE THIS END PIECE OF PIPE TO 4" I.D.

NEOPRENE WASHER ON PIPE EACH SIDE 15" O.D. x 6½" I.D. x 1½" THICK

ASSEMBLIES TO BE CONCEIVING WITH LONGITUDINAL AXIS.

NOTE "A" 5" PLATE CLIPS SHOWN WITH THREE 1½" FEMALE FOR 1-THREADED, FIT UP TO PIPE AS SHOWN. BUTTERFLY VALVE SHOWN WITH ROUND VALVE BODY.

NOTE "B" BUTTERFLY VALVE WITH QUARTER TURN TORQUE-FITTING SELF-CONTENDING DISC, MOLDED RUBBER SEAT - 5" VALVE HANDLE, FREE-FLOATING SELF-CENTERING BUTTERFLY VALVE WITH ANNE ARUNDEL COUNTY, MARYLAND STD. NO. 1372. IRON WORKS NO. 04-168 OR J.W. MOON, INC. NO. 2256, BADGER-POWHATAN BRASS AND STEEL DIV. INC.

MATERIALS AND SPECIFICATIONS:

STEEL PLATE, ETC. HOT-DIP GALV. FOR WROUGHT CARBON STEEL, SEAMLESS GRADE A 307 BOLTS, ETC. MILD STEEL, SEAMLESS GRADE 36

MATERIALS AND SPECIFICATIONS:

STEEL PLATE, ETC. HOT-DIP GALV. FOR WROUGHT CARBON STEEL, SEAMLESS GRADE A 307 BOLTS, ETC. MILD STEEL, SEAMLESS GRADE 36

WELD PLATE TO STEEL CONCENTRIC WITH LONGITUDINAL AXIS BEFORE BORE THIS END PIECE OF PIPE TO 4" I.D.

NEOPRENE WASHER ON PIPE EACH SIDE 15" O.D. x 6½" I.D. x 1½" THICK

ASSEMBLIES TO BE CONCEIVING WITH LONGITUDINAL AXIS.

NOTE "A" 5" PLATE CLIPS SHOWN WITH THREE 1½" FEMALE FOR 1-THREADED, FIT UP TO PIPE AS SHOWN. BUTTERFLY VALVE SHOWN WITH ROUND VALVE BODY.

NOTE "B" BUTTERFLY VALVE WITH QUARTER TURN TORQUE-FITTING SELF-CONTENDING DISC, MOLDED RUBBER SEAT - 5" VALVE HANDLE, FREE-FLOATING SELF-CENTERING BUTTERFLY VALVE WITH ANNE ARUNDEL COUNTY, MARYLAND STD. NO. 1372. IRON WORKS NO. 04-168 OR J.W. MOON, INC. NO. 2256, BADGER-POWHATAN BRASS AND STEEL DIV. INC.

MATERIALS AND SPECIFICATIONS:

STEEL PLATE, ETC. HOT-DIP GALV. FOR WROUGHT CARBON STEEL, SEAMLESS GRADE A 307 BOLTS, ETC. MILD STEEL, SEAMLESS GRADE 36

WELD PLATE TO STEEL CONCENTRIC WITH LONGITUDINAL AXIS BEFORE BORE THIS END PIECE OF PIPE TO 4" I.D.

NEOPRENE WASHER ON PIPE EACH SIDE 15" O.D. x 6½" I.D. x 1½" THICK

ASSEMBLIES TO BE CONCEIVING WITH LONGITUDINAL AXIS.

NOTE "A" 5" PLATE CLIPS SHOWN WITH THREE 1½" FEMALE FOR 1-THREADED, FIT UP TO PIPE AS SHOWN. BUTTERFLY VALVE SHOWN WITH ROUND VALVE BODY.

NOTE "B" BUTTERFLY VALVE WITH QUARTER TURN TORQUE-FITTING SELF-CONTENDING DISC, MOLDED RUBBER SEAT - 5" VALVE HANDLE, FREE-FLOATING SELF-CENTERING BUTTERFLY VALVE WITH ANNE ARUNDEL COUNTY, MARYLAND STD. NO. 1372. IRON WORKS NO. 04-168 OR J.W. MOON, INC. NO. 2256, BADGER-POWHATAN BRASS AND STEEL DIV. INC.

MATERIALS AND SPECIFICATIONS:

STEEL PLATE, ETC. HOT-DIP GALV. FOR WROUGHT CARBON STEEL, SEAMLESS GRADE A 307 BOLTS, ETC. MILD STEEL, SEAMLESS GRADE 36

WELD PLATE TO STEEL CONCENTRIC WITH LONGITUDINAL AXIS BEFORE BORE THIS END PIECE OF PIPE TO 4" I.D.

NEOPRENE WASHER ON PIPE EACH SIDE 15" O.D. x 6½" I.D. x 1½" THICK

ASSEMBLIES TO BE CONCEIVING WITH LONGITUDINAL AXIS.

NOTE "A" 5" PLATE CLIPS SHOWN WITH THREE 1½" FEMALE FOR 1-THREADED, FIT UP TO PIPE AS SHOWN. BUTTERFLY VALVE SHOWN WITH ROUND VALVE BODY.

NOTE "B" BUTTERFLY VALVE WITH QUARTER TURN TORQUE-FITTING SELF-CONTENDING DISC, MOLDED RUBBER SEAT - 5" VALVE HANDLE, FREE-FLOATING SELF-CENTERING BUTTERFLY VALVE WITH ANNE ARUNDEL COUNTY, MARYLAND STD. NO. 1372. IRON WORKS NO. 04-168 OR J.W. MOON, INC. NO. 2256, BADGER-POWHATAN BRASS AND STEEL DIV. INC.

MATERIALS AND SPECIFICATIONS:

STEEL PLATE, ETC. HOT-DIP GALV. FOR WROUGHT CARBON STEEL, SEAMLESS GRADE A 307 BOLTS, ETC. MILD STEEL, SEAMLESS GRADE 36

WELD PLATE TO STEEL CONCENTRIC WITH LONGITUDINAL AXIS BEFORE BORE THIS END PIECE OF PIPE TO 4" I.D.

NEOPRENE WASHER ON PIPE EACH SIDE 15" O.D. x 6½" I.D. x 1½" THICK

ASSEMBLIES TO BE CONCEIVING WITH LONGITUDINAL AXIS.

NOTE "A" 5" PLATE CLIPS SHOWN WITH THREE 1½" FEMALE FOR 1-THREADED, FIT UP TO PIPE AS SHOWN. BUTTERFLY VALVE SHOWN WITH ROUND VALVE BODY.

NOTE "B" BUTTERFLY VALVE WITH QUARTER TURN TORQUE-FITTING SELF-CONTENDING DISC, MOLDED RUBBER SEAT - 5" VALVE HANDLE, FREE-FLOATING SELF-CENTERING BUTTERFLY VALVE WITH ANNE ARUNDEL COUNTY, MARYLAND STD. NO. 1372. IRON WORKS NO. 04-168 OR J.W. MOON, INC. NO. 2256, BADGER-POWHATAN BRASS AND STEEL DIV. INC.
Chapter 10 - Noise Barriers

SECTION 04
TALL WALL MOUNTED NOISE BARRIERS (NB-TWM)
GENERAL NOTES - TALL RETAINING WALL MOUNTED CONCRETE NOISE BARRIER

SPECIFICATIONS:
MDOT SHA STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MATERIALS, DATED JULY 20XX.

DESIGN:
AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION.

LOADING:
The design wind load for this ground mounted noise barrier system is 25 per Applied Taper Perpendicular to the Barrier in Each Direction.
The design wind load is 16 per Applied Taper Perpendicular to the Barrier in Each Direction.
The noise barrier system has been designed for a 20'-0" maximum retaining wall height.
The noise barrier system has been designed for a 20'-0" maximum retaining wall height.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE HAVING 6 FT IN THE QUIVER BETWEEN TWO PLATES SHALL BE EPOXY COATED.
ADDITIONAL REINFORCING MAY BE REQUIRED FOR HANDLING THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

REINFORCEMENT:
REINFORCEMENT FORaconcrete noise barrier system shall conform to ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
STRUCTURAL STEEL:
ALL WELDS SHALL CONFORM TO ANSI/AWS DI.1.

REINFORCEMENT:
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE HAVING 6 FT IN THE QUIVER BETWEEN TWO PLATES SHALL BE EPOXY COATED.
ADDITIONAL REINFORCING MAY BE REQUIRED FOR HANDLING THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

REINFORCEMENT:
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE HAVING 6 FT IN THE QUIVER BETWEEN TWO PLATES SHALL BE EPOXY COATED.
ADDITIONAL REINFORCING MAY BE REQUIRED FOR HANDLING THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

REINFORCEMENT:
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE HAVING 6 FT IN THE QUIVER BETWEEN TWO PLATES SHALL BE EPOXY COATED.
ADDITIONAL REINFORCING MAY BE REQUIRED FOR HANDLING THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

REINFORCEMENT:
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE HAVING 6 FT IN THE QUIVER BETWEEN TWO PLATES SHALL BE EPOXY COATED.
ADDITIONAL REINFORCING MAY BE REQUIRED FOR HANDLING THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

REINFORCEMENT:
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE HAVING 6 FT IN THE QUIVER BETWEEN TWO PLATES SHALL BE EPOXY COATED.
ADDITIONAL REINFORCING MAY BE REQUIRED FOR HANDLING THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

REINFORCEMENT:
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)

REINFORCING STEEL:
REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
WELDED WIRE REINFORCEMENT (WWR) SHALL CONFORM TO ASTM A 497, WITH A YIELD STRENGTH FOR DESIGN OF Fy = 60 000 psi
ALL SPLICES, NOT SHOWN, SHALL BE LAPPED AS PER BAR LAP CHARTS.
REINFORCING STEEL AND WELDED WIRE REINFORCEMENT THAT ARE HAVING 6 FT IN THE QUIVER BETWEEN TWO PLATES SHALL BE EPOXY COATED.
ADDITIONAL REINFORCING MAY BE REQUIRED FOR HANDLING THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE SUBMITTED FOR APPROVAL WITH THE WORKING DRAWINGS.

REINFORCEMENT:
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.
REINFORCEMENT FOR ANCHOR PLATES SHALL BE EPOXY COATED.

CONCRETE:
CONCRETE COMPRESSIVE STRENGTH FOR DESIGN SHALL BE:
F'c = 4000 psi FOR MIX NO. 3
F'c = 4200 psi FOR MIX NO. 4
F'c = 4500 psi FOR MIX NO. 6
ALL CONCRETE FOR PRECAST CONCRETE ELEMENTS SHALL BE MIX NO. 6 (4500 psi)
NOTES:

1. SEE GENERAL NOTES SHEET NO. TBNS-101.
2. POSTS SHALL EXTEND TO THE TOP OF PANELS. IF TOP OF PANELS ARE AT DIFFERENT ELEVATIONS, THE POSTS SHALL EXTEND TO THE TOP OF THE HIGHER PANEL.
3. MINIMUM POST HEIGHT IS 24'-0", MAXIMUM POST HEIGHT IS 40'-0".

SCALE: 1" = 1'-0"
**Elastomeric Shim Details**

**Scale:** $\frac{3}{8}$" = 1'-0"

### Section E-E (Typ.)

**FOR DETAILS SEE** ELASTOMERIC SHIMS

**HOLES (Typ.)** IN DRILLED OR CAST EXPANSION ANCHORS

---

### Detail

**PLATE**

**STEP PLATE**

**STIFFENER PLATE**

**CAP PLATE**

**POST**

**END PLATE**

---

**NOTES:**

- The post label shall be painted on the flange at the top of the noise barrier.
- The post label shall be painted on the flange at the top of the noise barrier.

---

**END POST DETAIL**

**SCALE:** $\frac{3}{8}$" = 1'-0"

---

**DETAIL NO.**

**NB-TWM-101**

**OF SHEET NO.**

**OF SHEET NO.**

**DATE:**

**APPROVAL DATE:**

**DIRECTOR OFFICE OF STRUCTURES**

---

**DRAWN BY:**

**CHECKED BY:**

**DESIGNED BY:**

**FILE:**

**MONDAY, SEPTEMBER 30, 2019 AT 11:21 AM**

---

**NOTE:**

The post label shall be painted on the flange at the top of each post with minimum letter height of 2".

---

**TABLE:**

<table>
<thead>
<tr>
<th>POST HEIGHT</th>
<th>STEP PLATE</th>
<th>POST CAP PLATE</th>
<th>POST END PLATE</th>
<th>ELASTOMERIC BEARING PAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

---

**PLATE**

**STEP**

**PLATE**

**STIFFENER**

**CAP PLATE**

**POST**

**END PLATE**

---

**PLAN - TOP OF NOISE BARRIER**

---

**SECTION G-G**

---

**SECTION H-H**

---

**SECTION E-E**

---

**ELEVATION**

---

**VIEW J-J**

---

**CONCRETE PANEL**

---

**CONCRETE PRECAST PANEL**

---

**BASE PLATE**

---

**TOP OF RETAINING WALL**

---

**RETAINING WALL**

---

**PANELS**

---

**PRECAST CONCRETE PANEL**

---

**LINE FINISHED GRADE**

---

**SURVEY BOOK NO.**

---

**INVENTORY NO.**

---

**SURVEY**

---

**OFFICE OF STRUCTURES**

---

**DIRECTOR OFFICE OF STRUCTURES**

---

**DATE:**

**APPROVAL DATE:**

**DIRECTOR OFFICE OF STRUCTURES**

---

**DRAWN BY:**

**CHECKED BY:**

**DESIGNED BY:**

**FILE:**

**MONDAY, SEPTEMBER 30, 2019 AT 11:21 AM**

---

**NOTE:**

The post label shall be painted on the flange at the top of each post with minimum letter height of 2".

---

**TABLE:**

<table>
<thead>
<tr>
<th>POST HEIGHT</th>
<th>STEP PLATE</th>
<th>POST CAP PLATE</th>
<th>POST END PLATE</th>
<th>ELASTOMERIC BEARING PAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>

---

**PLATE**

**STEP**

**PLATE**

**STIFFENER**

**CAP PLATE**

**POST**

**END PLATE**

---

**PLAN - TOP OF NOISE BARRIER**

---

**SECTION G-G**

---

**SECTION H-H**

---

**SECTION E-E**

---

**ELEVATION**

---

**VIEW J-J**

---

**CONCRETE PANEL**

---

**CONCRETE PRECAST PANEL**

---

**BASE PLATE**

---

**TOP OF RETAINING WALL**

---

**RETAINING WALL**

---

**PANELS**

---

**PRECAST CONCRETE PANEL**

---

**LINE FINISHED GRADE**

---

**SURVEY BOOK NO.**

---

**INVENTORY NO.**

---

**SURVEY**

---

**OFFICE OF STRUCTURES**

---

**DIRECTOR OFFICE OF STRUCTURES**

---

**DATE:**

**APPROVAL DATE:**

**DIRECTOR OFFICE OF STRUCTURES**

---

**DRAWN BY:**

**CHECKED BY:**

**DESIGNED BY:**

**FILE:**

**MONDAY, SEPTEMBER 30, 2019 AT 11:21 AM**

---

**NOTE:**

The post label shall be painted on the flange at the top of each post with minimum letter height of 2".

---

**TABLE:**

<table>
<thead>
<tr>
<th>POST HEIGHT</th>
<th>STEP PLATE</th>
<th>POST CAP PLATE</th>
<th>POST END PLATE</th>
<th>ELASTOMERIC BEARING PAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
<td>2'-0&quot;</td>
</tr>
<tr>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
<td>3'-0&quot;</td>
</tr>
<tr>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
<td>4'-0&quot;</td>
</tr>
</tbody>
</table>
NOTE:
1. Construction Template with holes and post(s) will remain in place once concrete is placed. The template will be removed after allowing the base plate to fully harden.
2. Anchor rod spacing for 90° corner posts is different than typical post.
3. Retaining Wall Mounted Noise Barrier Details

4. Steel Post Details
HYDRANT LOCATION IN WALL PANEL

ACCESS DOOR DETAIL

ELEVATION
Scale 1/2" = 1'-0"

SECTION A-A
Scale 1/2" = 1'-0"

1. DOORS & access doors shall be located as shown on the barrier location plans. The lower edge of the door shall be located not more than 2'-6'' from the finished grade, or 1'-0'' below the finished grade at the rear side of the panel.

2. Door frame and panel shall be fiberglass construction suitable for exterior door applications, with stainless steel hardware. The door shall be mounted on the rear side, the panel shall be faced with a fire-resistant foam or mineral core, and shall have a polyurethane foam or mineral core, from exposure to ultraviolet light. Doors need not be fire rated and shall have a fire-resistant foam or mineral core.

3. Door opening. The top edge of the door shall be positioned to be flush with the finished grade at the rear side of the panel.

4. Door frame shall be of a type suitable for exterior use, of steel or stainless steel, fabricated to match the exterior finish of the wall panel. Door color shall match the post color and the finish shall be resistant to fading.

5. Door pulls in stainless steel finish US 32D. Center pulls at 3'-0'' above finished grade.

6. Door pull (2 needed, one per side) shall be thru-bolted to doors with, 3/8'' spacers and 3/8'' lag screws, or as approved by the engineer. Provide a two-sided tubular locking device with an aluminum or stainless steel finish all locks shall be init or match the door. Locks in noise barriers for the county in which the project is located.

7. Door handles mounted flush with the finished grade of the noise barrier.
STANDARD FIRE DEPARTMENT CONNECTION

ASSEMBLY OF PIPE ANCHOR AND HOSE CONNECTION DEVICES

ELEVATION - PIPE ANCHOR ASSEMBLY

ELEVATION - ADDITIONAL REINFORCING REQUIRED AT EACH HYDRANT LOCATION

NOTES:

A. WALL HYDRANT ASSEMBLY SHALL BE AKRON BRASS CO. NO. 1582, ELKHART BRASS MFG. CO., INC. NO. B-97 OR BADGER-POWHATAN BRASS AND IRON WORKS NO. 07-342 WALL HYDRANT WYE WITH BALL VALVE WITH ROCKER LUGS, TWO PLASTIC CAPS WITH CHAINS, DOUBLE CLAPPER "Y" SIAMESE SHALL BE BADGER-POWHATAN BRASS AND IRON WORKS NO. 04-172, AKRON BRASS CO. NO. 1262 OR ELKHART BRASS MFG. CO., INC. NO. 12-X SIAMESE BODY WITH TWO BRASS PLUGS AND CHAINS. 4" PIPE FEMALE OUTLET AND TWO 2" THREADED FEMALE INLETS (NST). NO ESCUTCHEON PLATE. CAST BRASS FINISH.

B. 1 1/2" o HOT-DIP GALVANIZED STEEL BOLT WITH 2-FLAT WASHERS, 1-LOCK WASH, HEX H. & N. ALL HOT-DIP GALVANIZED. CHASE THREADS IN NUT AFTER GALV. (TYP.) BOLT LENGTH AS REQUIRED.

C. PIPE FEMALE INLET AND TWO 2" THREADED MALE OUTLETS (NST). NO ESCUTCHEON PLATE. CAST BRASS FINISH.

D. SEE NOTE A. WALL HYDRANT ASSEMBLY SHALL BE AKRON BRASS CO. NO. 1582, ELKHART BRASS MFG. CO., INC. NO. B-97 OR BADGER-POWHATAN BRASS AND IRON WORKS NO. 07-342 WALL HYDRANT WYE WITH BALL VALVE WITH ROCKER LUGS, TWO PLASTIC CAPS WITH CHAINS, DOUBLE CLAPPER "Y" SIAMESE SHALL BE BADGER-POWHATAN BRASS AND IRON WORKS NO. 04-172, AKRON BRASS CO. NO. 1262 OR ELKHART BRASS MFG. CO., INC. NO. 12-X SIAMESE BODY WITH TWO BRASS PLUGS AND CHAINS. 4" PIPE FEMALE OUTLET AND TWO 2" THREADED FEMALE INLETS (NST). NO ESCUTCHEON PLATE. CAST BRASS FINISH.

E. SEE NOTE B. SIAMESE FITTING, DOUBLE CLAPPER "Y" FLOW REAR SIDE WALL FOR PIPE

F. SEE NOTE C. BOLTS, SEE STEEL PIPE. LENGTH AS 4" EXTRA STRONG (SCH. 80) IS GALVANIZED. PLATE OVER PIPE AFTER EACH MIN. CLEARANCE SLIDING FIT OF PLATE FOR BOLTS AND PIPE. HOT-DIP GALVANIZED PLATE 16" x 6" x 1'-4" LONG. 

G. SEE NOTE D. PIPE OPENING.C. WALL FOR BOLTS SHOWN. 8 - #4, 2'-6" LG. C. WALL FOR PIPE 5" o OPENING IN 9 (TYP.) 4"" 4"" L HOLE C (TYP.) WALL FOR BOLTS 1'-3" (TYP.) 4"" 4"" 1'-4" SQUARE PLATE 6"" 6"" EXACT EXACT 1"" W. WALL FOR PIPE OPENINGS C

H. SEE NOTE E. WALL HYDRANT ASSEMBLY SHALL BE AKRON BRASS CO. NO. 1582, ELKHART BRASS MFG. CO., INC. NO. B-97 OR BADGER-POWHATAN BRASS AND IRON WORKS NO. 07-342 WALL HYDRANT WYE WITH BALL VALVE WITH ROCKER LUGS, TWO PLASTIC CAPS WITH CHAINS, DOUBLE CLAPPER "Y" SIAMESE SHALL BE BADGER-POWHATAN BRASS AND IRON WORKS NO. 04-172, AKRON BRASS CO. NO. 1262 OR ELKHART BRASS MFG. CO., INC. NO. 12-X SIAMESE BODY WITH TWO BRASS PLUGS AND CHAINS. 4" PIPE FEMALE OUTLET AND TWO 2" THREADED FEMALE INLETS (NST). NO ESCUTCHEON PLATE. CAST BRASS FINISH.

THE SHEET NOT INTENDED FOR CONSTRUCTION

OFFICE OF STRUCTURES

REMARQUE: Veuillez prendre note que le document est en anglais et contient des instructions détaillées concernant les branchements d'incendie et les assemblages de tuyaux. Les annotations contiennent des spécifications en termes de tiges de béton, de joints et de dimensions. Le document inclut également des instructions sur l'ancrage des tuyaux et des éléments de sécurité.
Each typical on pipe only. Far side is slip fit this side of pipe assembly axis of pipe assembly, degrees to longitudinal pipe at exactly 90.

Weld plate to steel pipe at exactly 90 degrees to longitudinal axis of pipe. Holes in plate are slip fit on pipe.

Plate 7 x 7 x 3/8" long extra strong steel pipe schedule 80 galvanized. After assembly is complete, galvanize plate. American standard taper threads into pipe & sliding bolt holes.

Offer pipe through wall & anchor see plan at left.

Sheet No. Date

Contract No.

A 123

Bolt, etc.

Hot-dip galv. class C for hardware, wrought carbon steel, seamless, grade A.

Provide bushing adapter on double extra strong pipe schedule 80 galvanized. American standard taper threads into pipe & sliding bolt holes.

Provide neoprene gasket:

- Concentric with longitudinal axis before bore this end piece of pipe to 4" I.D.
- Wall thickness as required (type B - walls 4" to less than 8" in thickness)
-semi-openings thru wall panels must be concentric with the plane of the panels.

Note:

- Provide neoprene gasket with three pieces, one piece with female and male end in pipe, and three pieces in adapter.
- Before putting in welder or galvanizing, American standard taper threads into pipe.

Nose plate 17" x 9/16" x 1'-5" long, 7" square plate.

Steel plate for bolts and pipe.

- Hot-dip galv. after drilling plate 17" x 9/16" x 1'-5" long.
- Hot-dip galv. after welding to reducer or galvanizing. American standard taper threads after assembly is complete, chase threads after welding.

General notes:

- Hot-dip galv. after drilling plate 17" x 9/16" x 1'-5" long.

Provide swivel adapter on double extra strong steel pipe schedule 80 galvanized. After assembly is complete, galvanize plate.

Hot-dip galv. after drilling plate 17" x 9/16" x 1'-5" long.

Elevation at openings.

Elevation - pipe anchor assembly.

Pipe fitting, American standard taper threads into pipe.

Provide swivel adapter on double extra strong steel pipe schedule 80 galvanized. After assembly is complete, galvanize plate.

Hot-dip galv. after drilling plate 17" x 9/16" x 1'-5" long.

Elevation at openings.

Elevation of wall against concrete.